REMARKS

Applicant submits that claim 11 is dependent on claim 10, which defines the tool component as one having a substrate with a working portion produced from the layer bonded to a surface thereof (clearly the layer of step (4) of claim 1). Claim 11 is drafted to merely define that one embodiment of the working portion which is made of a composite material having the honeycomb structure as recited therein. The tool component and working portion thereof of claims 10 and 11 are the tool component and working portion in their sintered state, i.e. the product produced by the method. See also page 3, fifth paragraph of the specification. Applicant believes that the claim language of claim 11 as considered recited these features in a clear and concise manner.

Fang ,'564 is cited against claims 1-13 both alone and in combination with other references giving rise to both anticipation and obviousness and obviousness objections to specific claims and/or groupings of claims.

Proper basis for the language of claims 1 and 13 can be found on page 4, fifth paragraph, page 3, fourth paragraph and page 5, last paragraph respectfully.

The specification has been amended at page 3 as requested by the Examiner in order to include a brief description of the drawings as required.

Claims 3 and 4 have been amended to overcome the 112 second paragraph objections of record. The newly amended claims are submitted to clearly recite the claimed method with the claims presented in proper form as regards antecedent basis with no new matter having been added to either claim.

In the Action at page 2, last 3 lines, claim 11 is objected to as being indefinite such that the subject matter of the claim cannot be clearly understood.

The invention of this application is directed to a tool component utilizing a composite construction of first and second phase materials similar to that disclosed in Fang. The method disclosed in Fang, however, differs from the method claimed in the instant application in one important respect. It is clear from Fang that the sintering conditions employed are such as to debind the composite, sinter unsintered components and bond the composite to the substrate. The conditions are not such as to create the PCD or PCBN from diamond and cubic boron nitride particles, respectively. In Fang, the PCD and PCBN is already in its final hard form when the composite is applied to the substrate surface. That this is so is apparent from the disclosure of Fang in the written description, Examples and claims. These disclosures use the term "PCD" and "PCBN" when describing the hard core in the green state composite of Fang. "PCD" and "PCBN" are the sintered bonded polycrystalline forms of the ultra-hard abrasives diamond and cubic boron nitride respectively. Further, the sintering conditions referred to in column 8, line 1 to 10, while suitable to ensure that there is no degradation of the diamond or cubic born nitride, are not "temperature and pressure conditions at which the diamond and cubic born nitride are crystallographically stable" suitable for the creation of PCD from diamond and PCBN from cubic boron nitride. Not only is elevated temperature required, but also elevated pressure, e.g. pressures of 4 to 8 GPa, to produce PCD and PCBN. Fang is completely silent on the use of elevated pressure in this final description disclosing methodology of the claimed method. It is also to be noted that the preferred

sintering temperature of Fang is below that usually employed for producing PCD and PCBN.

In contrast, the claimed method advantageously produces a green state product which is placed on a surface of the substrate and the layer and substrate then "subjected to elevated temperature and pressure conditions at which the ultra-hard abrasive particles are crystallographically stable" such as to create or produce PCD from particulate diamond and PCBN from particulate CBN. Thus, the PCB and PCBN is produced during this last step and at the same time bonding to the substrate surface occurs. The method of the invention has several advantages over the method of Fang which are set out in the fifth paragraph on page 4 of the subject application. Namely, the flexibility enables the composite to be applied readily to flat and profiled surfaces or moulded to the shape of the substrate surface to which it is applied.

Fang is cited as producing a green state product which is subjected to hot isostatic pressing. The green state composite of Fang may be in the green state for some of the components. It is noted, however, that the product of Fang is not a green state product in so far as the components necessary for producing the PCD or PCBN are concerned. As pointed out above, in Fang the PCD and PCBN are already in sintered final form in the green state composite. In the method of the invention, the final sintering step must be carried out under elevated temperature and pressure at which the diamond or CBN is crystallographically (thermodynamically) stable so that the creation of the PCD and PCBN from diamond and CBN particles, respectively, can occur.

Portwood is cited in combination with Fang as disclosing high temperature and pressure in the step in which a layer or strip of material is bonded to a substrate.

Portwood describes an insert which has two different types of ultra-hard material present on the exterior working surface in defined macroscopic regions. The purpose of these two macroscopic zones, as described in the summary of the invention, is to achieve a balance between impact and wear resistance and hence optimize the performance of the insert in demanding applications. The macroscopic nature of the Portwood inserts is well illustrated in Figures 6 through 10, where it is evident that the relative scale of the different zones is such that they are macroscopically visible when viewing the insert as a whole. Additionally, the surface structure in all cases comprises only two zones – one of each type of ultra-hard material.

By contrast, the tool components produced by the method of the present application are what would be termed in the art either meso-scopic or microscopic i.e. they are on a finer scale. Also, they comprise a mixture of zones of ultra-hard material and carbide particles, as opposed to the manufacture of the present application there will occur several multiples of each different type of phase across the working surface, in the pattern achieved by the fibre bundling and cross-sectioning.

The Portwood inserts are made using a standard and known paper or tape route. In other words, a paper or tape having regions of ultra-hard abrasives of different types is created and this is then placed on a surface of a substrate. That bonded assembly is then subjected to elevated temperature and pressure conditions suitable to form an abrasive compact of the particles in the paper or tape. That is not what is claimed in the present application. The method claimed in the present application creates a green state product from a plurality of fibres and each fibre contains regions of ultra-hard abrasive and regions of carbide.

From the analysis and in view of the newly amended claims, it is submitted that products of Fang and Portwood are as different as are their methods of manufacture.

Therefore, it is submitted that neither Fang nor Portwood nor a combination thereof fully describes (anticipates) or renders obvious the invention claimed in the present application as all of the features are not disclosed in a single reference and by way of combination these references are deficient as they do not recognize much less address the problem(s) as discussed herein to provide the advantageous product of the claimed method.

In the event that there are any questions concerning this amendment or the application in general, the Examiner is respectfully requested to telephone the undersigned representative so that prosecution of this application may be expedited.

Respectfully Submitted,

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Date: February 28, 2007

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